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N27X N27Y N319 N32X N323 N401 N412 N413 N418  
N421 N427 N491 N519 N53X N53Y N563 N577 N593  
N764  
A3V V1A1X V1A2X V1A4A2 V5P V7AX  
U1S S1138 S1140

(56) Documents Cited

GB 2242860 A	GB 2226275 A	GB 1267712 A
GB 0540545 A	WO 95/22262 A1	US 5178163 A
US 4969970 A	US 4791685 A	US 2628928 A

(58) Field of Search

UK CL (Edition O) A3V, B5N  
INT CL<sup>6</sup> A41D 27/28 31/00 31/02, B32B 3/24 5/18  
5/24  
ONLINE:WPI,CLAIMS

(54) Elastic cloth with a ventilation structure

(57) An elastic cloth with a ventilation structure has an outer layer (1) made for example of stretchable cloth, a middle layer (2) made of foam rubber and an inner layer (3) made again for example of stretchable cloth. The middle layer made of foam rubber has a plurality of splits (21) therein, which can expand to function as ventilation apertures when the elastic cloth is bent or stretched as in an exercise or a game. The elastic cloth may be incorporated in a knee guard, a glove, a foot guard, an elbow guard, a neck guard, a diving suit, swimming pants, or other sports wear.

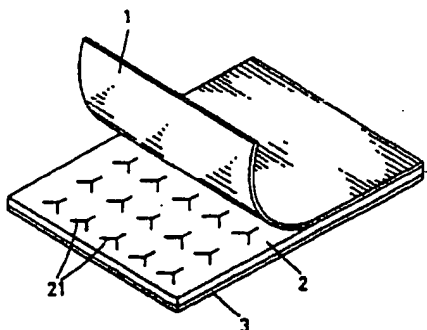


FIG. 1



FIG. 4

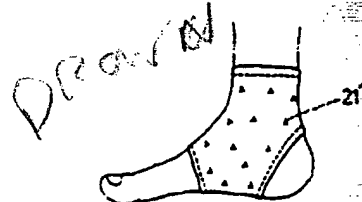


FIG. 5

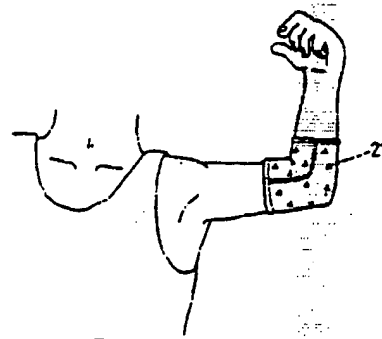


FIG. 6

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- NOT JUST BOND  
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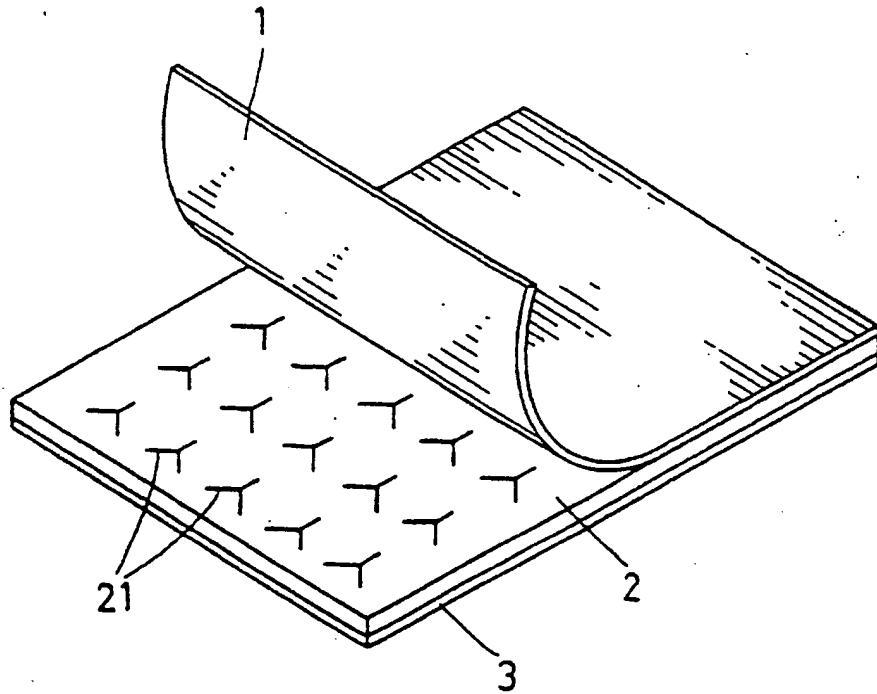


FIG. 1

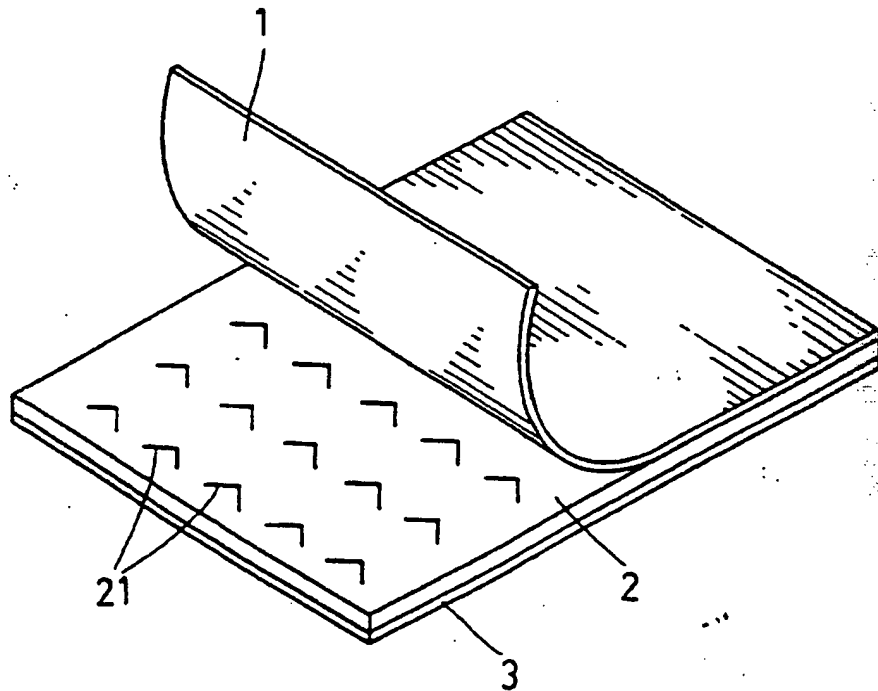


FIG. 2

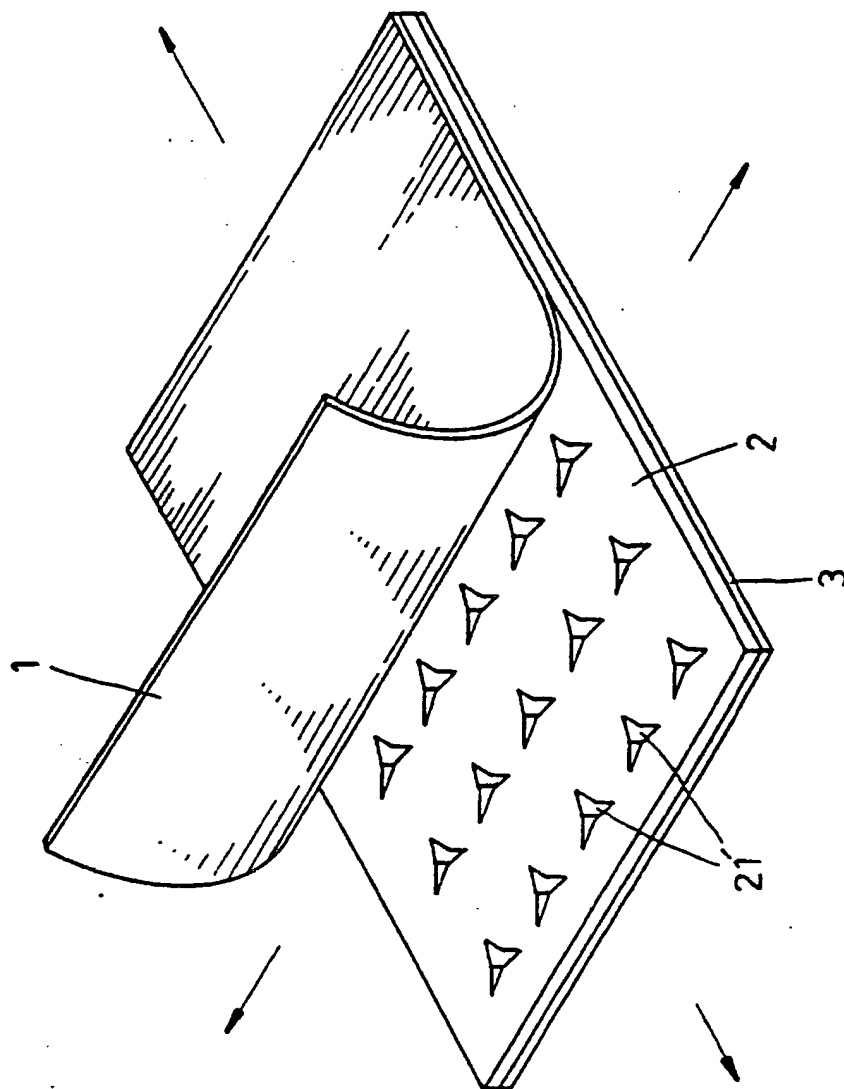


FIG. 3

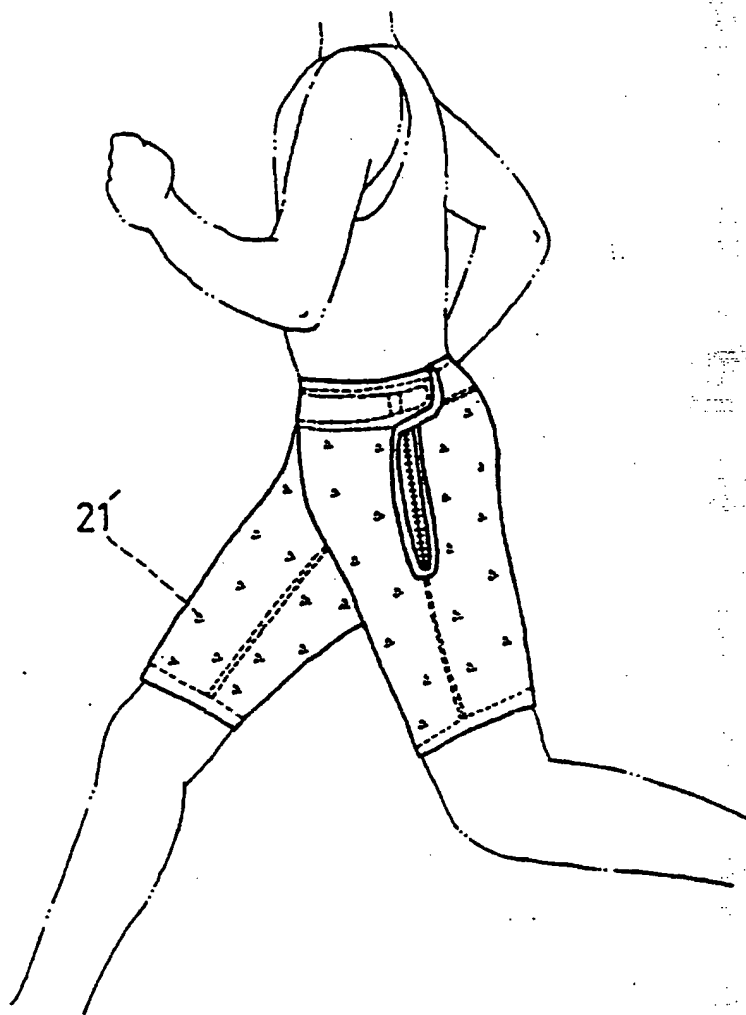


FIG. 4

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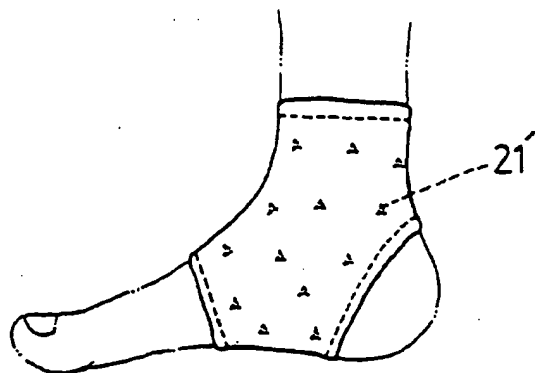


FIG. 5

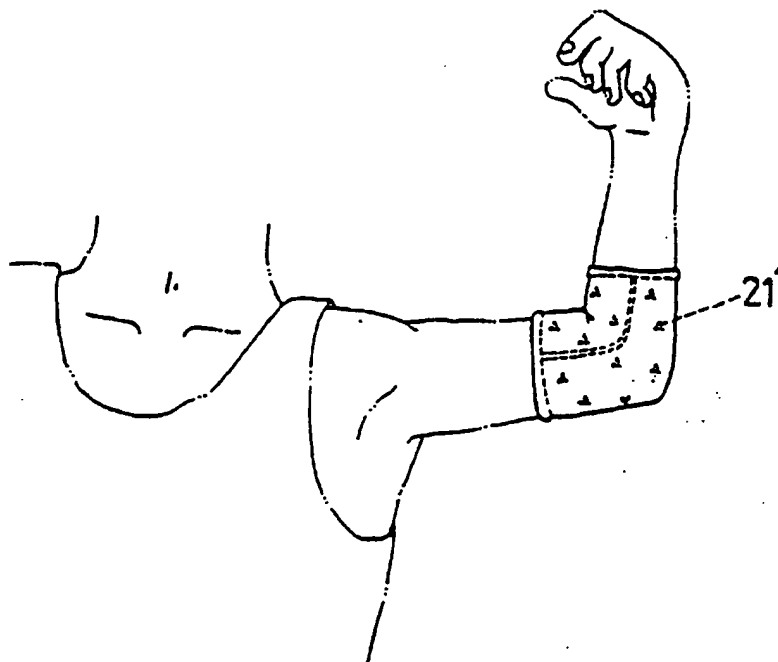


FIG. 6

TITLE: ELASTIC CLOTH WITH A VENTILATING STRUCTURE

DESCRIPTION

This invention concerns an elastic cloth with a ventilating structure.

5 Common conventional protectors and guards for sports and exercise, such as elbow guards, knee guards, body protectors, etc. are generally made rather for new style or tight fitness than ventilation function or comfort. Thus, a wearer often feels uncomfortable  
10 after an exercise or a game because of the wearer's sweat moistening them, so that they stick to the body of the wearer.

An object of the invention is to offer a kind of elastic cloth with a ventilating structure to be used  
15 for sports or exercise wear.

According to the invention there is provided an elastic cloth comprising an outer layer, a middle layer of foam rubber and an inner layer, wherein the middle layer is provided with a plurality of spaced splits  
20 before the middle layer is adhered between the outer and inner layers, whereby the splits may be expanded to function as ventilating apertures when the elastic cloth is bent.

This invention will now be further described, by  
25 way of example only, with reference to the accompanying

drawings, wherein:

Figure 1 is a first embodiment of a perspective and a partial structural view of a elastic cloth with a ventilation structure in the present invention;

5           Figure 2 is a second embodiment of a perspective and a partial structural view of an elastic cloth with a ventilating structure in the present invention;

          Figure 3 is a perspective and a partial view of an elastic cloth with a ventilating structure in the present invention, showing it being expanded to four  
10           sides;

Figure 4 is a perspective view of a sport shorts made of the elastic cloth with ventilating structure in the present invention;

15           Figure 5 is a perspective view of a foot guard made of the elastic cloth with a ventilation structure in the present invention; and,

          Figure 6 is a perspective view of an elbow guard made of the elastic cloth with a ventilation structure  
20           in the present invention.

          A first preferred embodiment of an elastic cloth with a ventilation structure in the present invention, as shown in Figure 1, includes an outer layer 1 made of spandex, a middle layer 2 made of foam rubber, and an  
25           inner layer 3 made of a mixed material of spandex and cotton. The foam rubber can be neoprene (chloroprene)

rubber, ethylene-propylene teropolymer (EPDM or EPT), styrene-butadiene rubber (SBR), butadiene rubber (BR) or natural rubber (NR).

5 The main feature of the present invention is the middle layer 2 made of foam rubber, which is formed of a plurality of Y-shaped splits 21 regularly arranged in rows and lines. Then those splits 21 can be expanded to function as ventilation apertures 21' as shown in Figure 3, when sport or exercise wears are made of this elastic  
10 cloth.

Further, as shown in Figure 2, a second preferred embodiment of the invention has a plurality of V-shaped splits 21 instead of Y-shaped splits in the first preferred embodiment.

15 As shown in Figures 4, 5 and 6, this invention can be used for making various kinds of sport or exercise wears or protectors and guards such as a knee guard, a glove, a foot guard, an elbow guard, a neck guard, a diving suit, swimming pants, aerobic exercise  
20 wears, sport wears, etc. When a person wears one of them for an exercise or a game, the splits 21 of the middle layer 2 of foam rubber can be expanded or stretched to function as ventilation apertures 21' so that the wearer may feel comfortable.



CLAIMS

1. An elastic cloth comprising an outer layer, a middle layer of foam rubber and an inner layer, wherein the middle layer is provided with a plurality of spaced splits before the middle layer is adhered between the outer and inner layers, whereby the splits may be expanded to function as ventilating apertures when the elastic cloth is bent.  
5
2. An elastic cloth as claimed in claim 1, wherein the outer layer is of stretchable cloth.  
10
3. An elastic cloth as claimed in claim 1 or 2, wherein the outer layer is of spandex.
4. An elastic cloth as claimed in claim 1, 2 or 3, wherein the inner layer is of stretchable cloth.
- 15 5. An elastic cloth as claimed in claim 4, wherein the inner layer is a mixed material of spandex and cotton.
6. An elastic cloth as claimed in any one of claims 1 to 5, wherein the splits in the middle layer are arranged regularly in rows and lines.  
20
7. An elastic cloth as claimed in any one of claims 1 to 6, wherein the splits are Y-shaped.
8. An elastic cloth as claimed in any one of claims 1 to 6, wherein the splits are V-shaped.

9. An elastic cloth as claimed in claim 1, wherein said foam rubber used for said middle layer is selected from neoprene (chloroprene) rubber, ethylene-propylene teropolymer, nitrile butadiene rubber, styrene-butadiene rubber, butadiene rubber and natural rubber.

5

10. An elastic cloth substantially as hereinbefore described with reference to and as illustrated in any one of the accompanying drawings.

11. An item of sports or exercise wear made with an elastic cloth as claimed in any one of claims 1 to 9.

10

12. An item of sports or exercise wear substantially as hereinbefore described with reference to and as illustrated in any one of Figures 4, 5 and 6 of the accompanying drawings.



Application No: GB 9609243.2  
Claims searched: 1 to 12

Examiner: R.J.MIRAMS  
Date of search: 11 July 1996

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.O): A3V,B5N

Int CI (Ed.6): A41D 27/28, 31/00, 31/02; B32B 3/24, 5/18, 5/24

Other: ONLINE: WPI, CLAIMS

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	US4,969,970A (Suzuki) whole document	1,6
A	GB2,242,860A (Middleton)	
A	GB2,226,275A (Lerman)	
A	GB1,267,712A (International Playtex)	
A	GB0,540,545A (Seabrook)	
A	US5,178,163A (Yewer)	
A	US4,791,685A (Maibauer)	
A	US2,628,928A (Cadous)	
A	WO95/22262A1 (Micro Thermal Systems)	

X Document indicating lack of novelty or inventive step  
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